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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,356	11/05/2001	Constantinos Tsouris	6321-210	3575

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EXAMINER
SORKIN, DAVID L

ART UNIT	PAPER NUMBER
1723	

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

mk 4

Office Action Summary	Application No.	Applicant(s)	
	10/007,356	TSOURIS ET AL.	
	Examiner	Art Unit	
	David L. Sorkin	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *14-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-23* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-13, drawn to a mixing device having a mixing channel, a supply channel and two electrodes, classified in class 366, subclass .

   II. Claims 14-23, drawn to a method of mixing fluid, classified in class 366, subclass 348.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the method is capable of practiced with an apparatus having fewer than two electrodes, for example, if the electric field is induced by a moving magnet instead of established by using electrodes. Also, the method could be practiced without the "supply channel" required by the apparatus.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Neil Jetter on 31 July 2003 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-6 and 8-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kopf-Sill et al. (US 5,842,787). Regarding claim 1, Kopf-Sill ('787) discloses a microchannel mixing device for electrohydrodynamic mixing of fluids comprising a mixing channel (104 and 118; alternatively the mixing channel may be considered to extend form 110 to 116, which would also include 104 and 118) having an inlet (108) for receiving at least one fluid; at least one supply channel (see the three supply channels in Fig. 1, one extending from each of reservoirs 110, 112, and 114 to intersection 108),

and at least two electrodes for imposing an electric field in said mixing channel, at least one of said electrodes adapted for charging at least a portion of said fluid (see col. 4, lines 54-56). Regarding claim 2, said at least one supply channel comprises a first supply channel for a first fluid and a second supply channel for a second fluid (see the three supply channels in Fig. 1, one extending from each of reservoirs 110, 112, and 114 to intersection 108). Regarding claim 3, at least one of said electrodes is disposed within said first or second supply channels (see col. 4, lines 54-56). Claim 4 recites the intention that fluid intended to be used with the claimed apparatus not be in contact with of said electrodes. However, "recitation with respect to the manner in which a claimed device is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" *Ex parte Masham,* 2 USPQ2d 1647 (Bd. App. & Inter. 1987). Note that this decision also related to stipulation in a claim of what material in a mixing chamber was intended to contact. Regarding claim 5, said mixing device further comprises a cover plate in contact with a substrate (see col. 3, lines 19-35). Regarding claim 6, said mixing channel and supply channel are formed in said cover plate (see col. 3, lines 19-35). Regarding claim 8, the substrate comprises silica or glass (see col. 3, lines 48-55). Regarding claim 9, the device comprises a power supply for applying voltage to the electrodes (see col. 9, lines 18-26). Regarding claim 10, said power supply comprises at least two independent power supply channels (see col. 9, lines 24-26). Claim 11 fails to further structurally limit the claimed apparatus because the claim only discusses a reaction that may occur during an intended operation involving intended contents of the claimed device. As held in *Ex parte Thilbault,* 164 USPQ 666,

667 (Bd. App. 1969) "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim". Also, "the manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself" *In re Casey,* 152 USPQ 235 (CCPA 1967). Regarding claim 12, in the alternative discussed above regarding claim 1 that the mixing channel extends from 110 to 116, the electrodes are at each end of the mixing channel. As explained in col. 9, lines 18-26, the voltage controller may provide a different potential to the electrode of each port/reservoir. Therefore the device may be operated in the manner stipulated in claim 12, having an electric field oriented substantially parallel or anti-parallel to a direction of flow of said fluid in said mixing channel, by applying a potential difference between the ends of the mixing channel. Regarding claim 13, electrodes are positioned (at 114 and 116) transverse to a length of said mixing channel. A potential difference may being applied between the electrodes to produce an electric field transverse to a direction of flow of fluid in the mixing channel (see col. 9, lines 18-26).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kopf-Sill et al. (US 5,842,787) in view of Anderson et al. (US 5,922,591). The device of Kopf-Sill ('787) was discussed above with regard to claim 1; however, a gas permeable cover plate is not disclosed. Anderson ('591) teaches a gas permeable cover plate (see col. 29 line 23 to col. 31 line 9). It is considered that it would have been obvious to one of ordinary skill in the art to have provided the device of Kopf-Sill ('787) with a gas permeable cover plate, because Anderson ('591) explains that such a gas permeable cover plate provides the benefit of releasing dissolved or trapped gas, which Anderson ('591) explains is especially important in devices with channels of small dimensions.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

David Sorkin

August 1, 2003